From: Explosives Safety Submission (ESS)
Ordnance and Explosives (OE) Removal Action
Castner Range, Fort Bliss, Texas – November 2002

1.2.1 MOST PROBABLE MUNITION

The most probable munition (MPM), based on items encountered during previous investigations within each of the AOIs, is shown in Table 1-2. If during the course of the investigation, OE with a greater fragment range than the MPM is encountered, the minimum separation distances (MSD) in DOD 6055.9 STD, Chapter 5, paragraph C5.5.4 will be used. The MSD for the MPM will be recalculated by USAESCH, the quantity-distance (Q-D) arc will be adjusted, and an amendment to the ESS will be submitted for approval.

TABLE 1-2: MOST PROBABLE MUNITION

			*Unintentional Detonation		**Intentional Detonation	
Area	***MPM	Max. Frag. Range (ft.)	Range to No More than 1 Hazardous Fragment per 600 sq. ft. (ft.)	K50 Range to 0.9 psi Overpressure (ft.)	Maximum Fragment Range (ft.)	K328 Overpressure Range (ft.)
1	40 mm M406	345	N/A	23	345	153
2	37mm MK II	980	200	20	980	131
3	75 mm HE M48	1701	234	60	1701	396
4	75 mm HE M48	1701	234	60	1701	396
5	75 mm HE M48	1701	234	60	1701	396
6	TBD					

Notes:
* Team separation distance for unintentional detonations is the K50, or 200 feet minimum whichever is greater. Maximum fragmentation distance for other personnel.
** MSD for intentional detonations is maximum fragment range of the MPM for the OE area.
*** MPM based on previous investigations by UXB, CMS, and EHSI.

From: Addendum 1 – Ordnance and Explosives (OE) Removal Action

At Area 6, Castner Range, Fort Bliss, Texas - July 9, 2004
Castner Range, Fort Bliss, Texas

1.24.1 SAFE SEPARATION DISTANCES

The safe separation distances for the public during intrusive operations will be the Minimum Separation Distance based on DOD 6055.9-STD Table C5.T1, or as calculated by USAESCH's Engineering Directorate, Structural Branch for the MPM. If conditions dictate, with the approval the of the USAESCH, the MSD may be reduced to fit the situation, but in no case will the distance be less than 1/600ft^2, the K50 based on overpressure, or 200 feet minimum, whichever is greater. Table 1-3 shows the MPM and MSD for the initial Areas.

TABLE 1-3: MINIMUM SEPARATION DISTANCES

		*Unintentional Detonation			**Intentional Detonation	
Area	MPM	Max. Frag. Range (ft.)	Range to No More than 1 Hazardous Fragment per 600 sq. ft. (ft.)	K50 Range to 0.9 psi Overpressure (ft.)	Maximum Fragment Range (ft.)	K328 Overpressure Range (ft.)
1	40 mm M406	345	N/A	23	345	153

		*Unintentional Detonation			**Intentional Detonation	
Area	MPM	Max. Frag. Range (ft.)	Range to No More than 1 Hazardous Fragment per 600 sq. ft. (ft.)	K50 Range to 0.9 psi Overpressure (ft.)	Maximum Fragment Range (ft.)	K328 Overpressure Range (ft.)
2	37mm MK II	980	200	20	980	131
3	75 mm HE M48	1701	234	60	1701	396
4	75 mm HE M48	1701	234	60	1701	396
5	75 mm HE M48	1701	234	60	1701	396
6	37mm MK II	980	200	20	980	131

Notes:
* Team separation distance for unintentional detonations is the K50, or 200 feet minimum whichever is greater. Maximum fragmentation distance for other personnel.
** MSD for intentional detonations is maximum fragment range of the MPM or item being detonated.

Definitions:

The **maximum fragment range** is used in determining Public Withdrawal Distance for both intentional and unintentional explosions.

The **hazardous fragment range** is used in establishing the Personnel Separation Distance for unintentional detonations. The hazardous fragment refers to the range of the farthest thrown hazardous fragment, where a hazardous fragment is defined as one with an energy impact.

The **K50 (Inhabited Building Distance)** distance corresponds to an overpressure level of 0.9 psi, and is the pressure distance used to determine personnel separation distance (PSD) for accidental explosions.

The **K328 (Temporary Threshold Shift Distance)** corresponds to a pressure level of 0.065 psi, and is the distance used for overpressure for public withdrawal distance (PWD) from intentional detonations.

(These two K values are of special interest in Ordnance and Explosives projects)

Overpressure is the pressure caused by a shock wave above normal atmospheric pressure. The shockwave is caused by the explosion. Overpressure can results in various levels of injury.